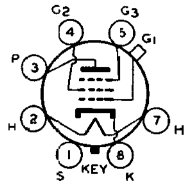


RCA-6J7



TRIPLE-GRID DETECTOR AMPLIFIER

The 6J7 is a triple-grid type of All-Metal tube recommended especially for service as a biased detector in radio receivers designed for its characteristics. In such service, this tube is capable of delivering a large audio-frequency output voltage with relatively small input voltage. Other applications of the 6J7 include its use as a high-gain amplifier tube.

CHARACTERISTICS

Heater Voltage (A. C. or D. C.)		6.3	Volts
Heater Current		0.3	Ampere
Plate Voltage	100	250 *max.*	Volts
Screen Voltage	100	100**	Volts
Grid Voltage*	−3	−3	Volts
Suppressor	Connected to cathode at socket		
Plate Current	2	2	Milliamperes
Screen Current	0.5	0.5	Milliampere
Plate Resistance	1.0	Greater than 1.5	Megohm
Amplification Factor	1185	Greater than 1500	
Transconductance	1185	1225	Micromhos
Grid Voltage (Approximate)†	−7	−7	Volts
Grid-Plate Capacitance°		0.005 *max.*	μμf
Input Capacitance°		7	μμf
Output Capacitance°		12	μμf
Cap			Miniature
Base			Small Wafer Octal 7-Pin

* The d-c resistance in the grid circuit should not exceed 1.0 megohm.

** Maximum Screen Volts = 125. † For cathode current cut-off. ° With shell connected to cathode.

INSTALLATION

The base pins of the 6J7 fit the standard octal socket which may be installed to hold the tube in any position. For heater operation and cathode connection, refer to INSTALLATION for type 6A8.

The screen voltage may be obtained from a potentiometer or bleeder circuit across the B-supply source. Due to the screen-current characteristics of the 6J7, a resistor in series with the high-voltage supply may be employed for obtaining the screen voltage, provided the cathode-resistor method of bias control is used. This method, however, is not recommended if the high-voltage B-supply exceeds 250 volts.

APPLICATION

As a **biased detector,** the 6J7 can deliver a large audio-frequency output voltage of good quality with a fairly small radio-frequency signal input. Typical recommended conditions for the 6J7 as a biased detector are as follows:

Plate Supply*	100	100	250	250	Volts
Screen Voltage	12	30	50	100	Volts
Grid Voltage	−1.16	−1.83	−2	−4.3	Volts
Cathode Resistor	18000	10000	3000	10000	Ohms
Suppressor	Connected to cathode at socket				
Cathode Cur. (Zero Signal)	0.63	0.183	0.65	0.43	Milliampere

Plate Resistor	1.0	0.25	0.25	0.50	Megohm
Blocking Condenser	0.01	0.01	0.03	0.03	μf
Grid Resistor†	1.0	0.5	0.25	0.25	Megohm
R-F Signal (RMS)**	1.05	1.6	1.18	1.37	Volts

* Voltage at plate will be PLATE-SUPPLY voltage less voltage drop in plate resistor caused by plate current.

† For the following amplifier tube.

** With these signal voltages modulated 20%, the voltage output under each set of operating conditions is 17 peak volts at the grid of the following amplifier, a value sufficient to insure full audio output from a type 6F6 at 250 volts on plate.

Detector bias may be obtained from a bleeder circuit, from a resistor in the cathode circuit, or from a partial self-biasing circuit. The cathode-resistor method permits of higher output at low percentage modulation, since the input signal may be increased almost in inverse proportion to the modulation without resulting in objectionable distortion.

As an **audio-frequency amplifier pentode** in resistance-coupled circuits, the 6J7 may be operated as shown in the tables given in the Resistance-Coupled A-F Amplifier Section.

As a **radio-frequency amplifier pentode**, the 6J7 may be used particularly in applications where the r-f signal applied to the grid is relatively low, that is, of the order of a few volts. In such cases either screen or control-grid voltage (or both) may be varied to control the receiver volume. When larger signals are involved, a super-control amplifier tube should be employed to prevent the occurrence of excessive cross-modulation and modulation-distortion. Recommended operating conditions for amplifier services are given under CHARACTERISTICS.

